https://doi.org/10.36570/jduhs.2022.3.1738

JDUHS

ORIGINAL ARTICLE

Knowledge, Attitude and Policy related to Decision-making for Receiving COVID-19 Vaccination among Undergraduate Students in Ubon Ratchathani Province, Thailand

Sajeerad Chantarasakha, Naruemol Kingkaew

Sirindhorn College of Public Health, Ubon Ratchathani, Faculty of Public Health and Allied Health Sciences, Praboromarajchanok Institute, Ministry of Public Health, Thailand.

Correspondence to: Naruemol Kingkaew, Email: nkingkaew@scphub.ac.th, ORCID: 0000-0003-4119-9477

ABSTRACT

Objective: To determine the knowledge, attitude, and policy for receiving Coronavirus Disease (COVID-19) vaccines among undergraduate students in Ubon Ratchathani Province, Thailand.

Methods: This prospective cross-sectional study was conducted among undergraduate students in Ubon Ratchathani Province, Thailand during a two-month period between February and March 2022. The study included undergraduate students majoring in Education, Humanities, Administration and Health Science. The survey items included 5 parts: Part 1 on the demographics of participants, part 2 on vaccine knowledge, part 3 on attitude, part 4 on public policies and uncertainty about COVID-19 vaccination, while part 5 on decisions to receive COVID-19 vaccine.

Results: Of 446 participants, there were 320 (71.7%) females with a mean age of 21.83 ± 9.87 years. Top reason for obtaining vaccination was receiving vaccination information from Ministry of Public Health 402 (90.1%). High knowledge was reported by 271 (60.8%) participants whereas positive attitude was observed in 218 (48.9%) individuals. There were 164 (36.8%) individuals who were uncertain for receiving COVID-19 vaccine. Females had significantly lower odds 39% for uncertainty for receiving COVID-19 vaccines (aOR 0.61, 95% CI 0.39 to 0.95). However, undergraduate students who did not receive vaccination information from public policy (aOR 3.03, 95% ci 1.38 to 6.62), and provincial policy (aOR 2.80, 95% CI 1.51 to 5.17) had significantly higher odds for uncertainty for receiving COVID-19 vaccination.

Conclusion: A considerably higher gap was observed in the knowledge and attitude of undergraduate students regarding COVID-19 vaccine. Moreover, most of them were uncertain about receiving COVID-19 vaccine.

Keywords: Attitude, COVID-19 Vaccination, Knowledge, Policy, Undergraduate Students.

INTRODUCTION

Coronavirus Disease (COVID-19) vaccine is a potential way to protect people from deadly corona virus. However, little is known how undergraduate students approach the decision to receive COVID-19 vaccines. Previous study reported that younger people were having high risk of getting COVID-19 infection, but less chance to getting severe diseases.[1] Center for Disease Control (CDC) also reported that the morbidity and mortality rates from COVID-19 among undergraduate students are lower than in other age groups.[2] When compared with the age group of 18 to 29 years, the mortality rate is four times higher in the group aged 30 to 39 years, and 330 times higher in older adults aged 85 years and over.[2] This issue may affect decision-making relation to vaccine coverage among hesitant people. Though, COVID-19 vaccines had received Emergency Use Authorization (EUA), and vaccines are available in Thailand.[3,4]

The decision to receive COVID-19 vaccination is too complicated with several contributing factors, such as perceived knowledge, attitude, vaccine efficacy, risk perception, belief, and past experiences. In addition, during the recent decade of media disruption, accurate information from public policy may an essential issue for individuals in approaching the vaccine differently. Hence, we have hypothesized that, not only knowledge and attitude but also vaccination information from public and provincial policies may provide clear insight into the decision-making and factors relate to the vaccine coverage among undergraduate students. This study was conducted with the aim to understand knowledge, attitude and policy on decision-making

about receiving COVID-19 vaccines among undergraduate students in Ubon Ratchathani Province, Thailand.[5]

METHODS

This cross-sectional study was conducted among undergraduate students in Ubon Ratchathani Province, Thailand during a two-month period between February and March 2022. This study was approved by the institutional review board of Sirindhorn College of Public Health, Ubon Ratchathani Province, Thailand (Reference #: SCPHUB 003/2022). All research methods were conducted in accordance with ethical guidelines and regulations. Consent was obtained before data collection from all eligible participants.

A self-administered, online cross-sectional analytical study was administered. Participants were randomly selected by multi-stage random sampling further simple random sampling technique was applied at each stage. At the first stage, 2 in fourth universities were randomly selected by simple random sampling. At the second stage, department in these two universities were randomly selected, and then at the last stage, samples in each department were reached by simple random sampling.

Sample size was estimated by using the single proportion of a finite population.[6] A sample size of 384 was determined based on the coverage of receiving the first dose of COVID-19 vaccination at 50% implemented on March 30, 2022.[7] Overall population 13,394, while precision was set as 5%. However, to overcome the issue of missing data, a total of 446 students were enrolled.[5] All eligible undergraduate students majoring in Education, Humanities, Administration and Health Science in Ubon Ratchathani Province were selected by using probability proportional to size. Exclusion criteria were graduate students, and samples who were not willing to participate. The survey was supervised by 3 expert consultants at Ubon Ratchathani Provincial Health Office, and Sirindhorn College of Public Health Ubon Ratchathani Province.

The survey items included 5 parts: Part 1 on the demographics of participants such as gender, age, monthly income, and employment status; Part 2 on vaccine knowledge consisting of 10 items with 3 domains: types of vaccine such as inactivated vaccines, recombinant viral vector vaccine or ribonucleic acid (RNA) based vaccines, vaccine efficacy, safety, quality of pharmaceutical companies and treatments after receiving vaccines. Each item was scored with one point for "true" or zero points for "false" for a total possible score of one point for each item. Two negative questions were recoded to the correct scores. We defined 80% or higher scores as good knowledge[8] and lower scores as low knowledge; Part 3 on attitudes for against COVID-19 vaccination consisted of 9 items such as, "Do you believe that receiving COVID-19 vaccines will be beneficial for you?". "Do you believe that COVID-19 vaccines can reduce morbidity and mortality rates?" "Do you concern about safety and side effects of COVID-19 vaccines?", etc. Each item was rated on a 5-point Likert scale from "strongly disagree" or 1 to "strongly agree" or 5; Part 4 on public policies and uncertainty about COVID-19 vaccination consisted of 9 items such as receiving vaccination information from the Ministry of Public Health, health care personnel, communicable disease control officers, and health volunteers, receiving public policy on local quarantine, reporting risks when entering in high-risk areas and supporting Antigen Test Kits (ATK) from the government. Each item was ranged on a 5-point Likert scale from "strongly disagree" or 0 to "strongly agree" or 4; Part 5 on decisions to receive or uncertainty about COVID-19 vaccine consisted of 8 items. Each item was worth 1 point for "yes" or and 0 points for "no". The total of 8 scores was categorized into 2 groups in which 0 indicated an inclination toward receiving the vaccination, and 1 indicated a negative decision or uncertainly about receiving the vaccination.

The content validity of each questionnaire was 0.66. The knowledge questions in Part 2 were tested by Kuder-Richardson at 0.74, and the reliability was 0.92.

Data entry and analysis were done using a statistical package for social sciences (SPSS) version 20.0. Mean ± SD were computed for quantitative variables like, age while frequency and percentages were computed for categorical variables like, gender, department, monthly income, employment status (part-time jobs), knowledge (scores), attitude, positive/negative decision/uncertainly about receiving COVID-19 vaccination, and policies for receiving vaccination. The p-value of ≤ 0.05 was considered statistically significant. Multicollinearity was determined according to the magnitude of standard error (SE), where SEs ranged from 0.017 to 0.075.[9] All those variables found significant in contingency table were included in binary logistic regression analysis.

RESUTLS

Of 446 eligible samples, there were 320 (71.7%) females with a mean age of 21.83 ± 9.87 years. Most of the students were studying in faculty of health sciences 145

(32.5%) followed by education 113 (25.3%), humanities 107 (24.0%), and administration 81 (18.2%). The monthly income of ≤5,000 Thai Baht (THB) was reported by majority of the individuals i.e., 230 (51.6%). Nearly all 407 (91.3%) had no part-time jobs.

High knowledge was reported by 271 (60.8%) participants whereas positive attitude was observed in 218 (48.9%) individuals. There were 164 (36.8%) individuals who were uncertain for receiving COVID-19 vaccine. (Table 1)

The top three reasons for obtaining vaccination were receiving vaccination information from Ministry of Public Health 402 (90.1%), receiving information from public policy regarding local quarantine when entering in high-risk areas 401 (89.9%), and aware of the process for reporting risks to the local government when I was at high risk for COVID-19 infection 399 (89.5%). (Table 2)The findings of the multivariable analysis showed that the likelihood for uncertainly/not receiving COVID-19 vaccines was 39% significantly lower among females as compared to males (aOR 0.61, 95% CI 0.39 to 0.95). The chances for uncertainly/not receiving COVID-19 vaccines was around 3 times significantly higher among students who did not receive vaccination information from public policy as compared to students who received vaccination information from public policy (aOR 3.03, 95% ci 1.38 to 6.62). similarly, students who did not receive vaccination information from provincial policy were 2.8 times more likely for uncertainly/not receiving covid-19 vaccines as compared to students who received vaccination information from provincial policy (aOR 2.80, 95% CI 1.51 to 5.17). (Table 3)

Table 1: General characteristics, knowledge, attitude, and uncertainty regarding decisions for receiving COVID-19 vaccines (n = 446)

Variables	n (%)
Gender	
Male	126 (28.3)
Female	320 (71.7)
Age (years)	
≤20	181 (40.6)
>20	265 (59.4)
Department	
Education	113 (25.3)
Humanities	107 (24.0)
Administration	81 (18.2)
Health Science	145 (32.5)
Faculty Monthly Income (THB)	
≤ 5,000	230 (51.6)
> 5000	216 (48.4)
Employment Status (Part-time Jobs)	
No	407 (91.3)
Yes	39 (8.7)
Knowledge (Scores)	
High (≥80%)	271 (60.8)
Low (<80%)	175 (39.2)
Attitude	
Positive	218 (48.9)
Negative	228 (51.1)
Decision/Uncertainty about Receiving COVID-19 Vaccine	
Positive	282 (63.2)
Negative/Uncertainly	164 (36.8)

- THB: Thai Baht, COVID: Coronavirus Disease, All data presented as number (%)

Table 2: Policies for receiving vaccination (n = 446)

Top Reasons Related to Public Policies for Receiving COVID-19 Vaccination	n (%)
Vaccination information from Ministry of Public Health	402 (90.1)
Information from public policy regarding local quarantine when entering in high-risk areas	401 (89.9)
Aware of the process for reporting risks to the local government when at high risk for COVID-19 infection	399 (89.5)
Received vaccination information from health care personnel	398 (89.2)
Comply with the provincial policy to prevent COVID-19 infections the outbreaks	379 (85.0)
Vaccination information from health volunteers or communicable disease control officers	378 (84.8)
Supported by the government in local quarantine when suspected case/at high risk for COVID-19	362 (81.2)
Supported with ATK from the government when directly exposed to COVID-19 cases or at high risk	353 (79.1)

ATK: Antigen Test Kits, COVID: Coronavirus Disease, n: number
All data presented as number (%)

Table 3: Multiple logistic analysis of selected predictors on the reasons for uncertainty for receiving COVID-19 vaccine (n = 446)

Gender	95% C.I	p-value
Male	1	
Female	0.61 (0.39 to 0.95)	0.030*
Part-time Jobs		
No	1	
Yes	0.95 (0.52 to 2.14)	0.890
Knowledge (Scores)		
High (≥80%)	1	
Low (<80%)	0.86 (0.56 to 1.34)	0.520
Attitude		
Positive	1	
Negative	1.49 (0.96 to 2.30)	0.070
Receiving Vaccination Information from Public Policy		
Yes	1	
No	3.03 (1.38 to 6.62)	0.005*
Receiving Vaccination Information from Provincial Policy		
Yes	1	
No	2.80 (1.51 to 5.17)	<0.001*

aOR: Adjusted Odds Ratio, *p-value ≤ 0.05
COVID: Coronavirus Disease, CI: Confidence Interval

DISCUSSION

We examined knowledge, attitude, decisions making policy for receiving COVID-19 vaccination among undergraduate students. The study was carried out during the era when COVID-19 vaccination was widely available in Thailand.[4] Our hypotheses were people with high knowledge level, having good attitude and receiving vaccination information from public and provincial policies would be transitioned to good decision-making to receive COVID-19 vaccination. According to this study, decision-making to receive COVID-19 vaccination had been concerned by several factors such as vaccine efficacy, safety, quality of pharmaceutical companies, and people with different health status.[10]

The success of COVID-19 vaccine development through high technology platforms can prevent transmission of COVID-19, reduce morbidity and mortality rates, and increase herd immunity. However, a lack of knowledge about the vaccines or vaccine safety may reflect low perception of exposure to risks for contracting the disease. This study found that decision-making to receive COVID-19 vaccination between males and females was significantly different. This may be due to a lack of knowledge, a lack of confidence in vaccines' efficacy, side effect, belief or anti-vaccine misinformation, as well as the anti-vaccine belief.[11] Somewhat similar finding was observed in a cross-sectional study in Bangladesh in which males had a considerably higher risk of developing side effects of COVID-19 vaccines than females (50.2 vs 49.8%).[12] However, a survey in Cameroonians found that females, younger and less educated (high school) participants reported resistant to receiving COVID-19 vaccines.[10] This issue was widely documented among diverse populations.[13,14] Like our study, a secondary data-based survey in 20 Latin American and Caribbean countries revealed that employment status had no associated with decision-making to receive the booster dose of COVID-19 vaccines.[15] In contrast, an online survey conducted among Japanese residents reported that younger service workers viewed themselves as having higher risk of getting COVID-19 infections, but less susceptible to getting severe diseases. Whilst, they exhibited low level of vaccine knowledge.[1]

Vaccine knowledge, attitudes were influent to individual's perception to receive vaccination. This study found that 39.2% of samples had low level of vaccine knowledge. This finding was cooperated with a previous study in Jordan that participants (total n = 468) who had inadequate knowledge were not willing to receive COVID-19 vaccination.[16] As well as people who have low level of vaccine knowledge had significant higher odds of high-risk behavior.[17] Although there was no significant different toward attitudes on decision-making to receive COVID-19 vaccination in this study, a survey conducted reported that scientific knowledge and perceived understanding of COVID-19 vaccination were significantly associated with positive attitudes toward COVID-19 vaccination.[18]

The current study reported that 48.9% of samples had positive attitudes toward decision-making to receive COVID-19 vaccination, meanwhile 51.1% were uncertain for receiving the vaccination. Having negative attitude on decision-making to receive COVID-19 may cause barriers to disease prevention and protection. Thus, to increase disease prevention, knowledge and attitudes related to COVID-19 vaccination should be exchanged among uncertain group of population to perform best practice and increase vaccine confidence.

Receiving accurate information from public policy is an important issue in decision-making for receiving vaccination. This data can initially implement that samples were aware and give attention to COVID infections and disease outbreaks. However, there were around one third of samples who were uncertain and not willing to receive COVID vaccine. This was maybe because they were not confident and inaccessibility to receive clear information. Hence, the equitable policy and allocation resources in the country and in individual provinces should be clearly addressed to prevent disparities and illustrated understanding, particularly, scientific information from clinical guidelines such as the critical effects of COVID-19 vaccines, public laws related to self-quarantine and community regulations. The national epidemiology data center is an important part for adequate epidemic reports and data collection. Public health partnerships both government and non-government organizations and resource allocations within communities, including vaccine information and trust in messengers should involve outreach efforts and support from previous studies. Furthermore, an attention to evaluating programs and policies should contribute to vaccine insufficiency among this population group.[19]

The strength was that this study can provide information about the decision-making for receiving COVID-19 vaccination among undergraduate students and outlines of public policy and provincial policy related to COVID-19 managements and supplies in Thailand. However, limitations were that this study was collected during the later phase of Thailand's COVID-19 vaccine phase, a time when the information about

various vaccine types involved might impact knowledge, attitude, perception and belief about vaccine efficacy.[20] The study finding was also collected in one province which means the results might not be generalized to wide range groups. Therefore, as a part of more intensive information in multiple groups, the national survey should be investigated to generalize the vaccine coverage among undergraduate students nationwide for further analysis.

CONCLUSION

The findings of the current study have reported considerably higher gap in the knowledge and attitude of undergraduate students regarding COVID-19 vaccine. Most of them were not willing or uncertain to get COVID-19 vaccine. Students who did not receive vaccination information from public policy and provincial policy had significantly higher odds for uncertainty for receiving COVID-19 vaccination. Moreover, the current study stated that gender might affect the decision-making about whether or not to receive COVID-19 vaccine.

ETHICAL APPROVAL: This study was approved by the institutional review board of Sirindhorn College of Public Health, Ubon Ratchathani Province (Reference #: SCPHUB 003/2022).

AUTHORS' CONTRIBUTIONS: Nk: Manuscript writing, literature review, data collection, data analysis, results and discussion. SC: Literature review and data collection. All authors approved final version of the manuscript for publication.

CONFLICT OF INTEREST: The authors have no conflicts of interest to declare.

FUNDING: None

Received: November 11, 2022
Accepted: December 12, 2022

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